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through the rich collections of WEBERBAUER and ULE from South America and of MOSZKOWSKI, RÖMER, and SCHLECHTER from New Guinea and New Caledonia. Important data concerning older or little known species are recorded, and more than 30 species new to science are added to the monograph of this family by the same author, published in the *Pflanzenreich* in 1901. One new genus is proposed, namely *Carnegiea* from New Caledonia. All species enumerated are referred to in such a manner that the supplement can be used readily and advantageously with the *Monograph* itself.—J. M. GREENMAN.

**The slime molds.**—The second edition of LISTER's *Mycetozoa*<sup>2</sup> is a notable contribution to our knowledge of these much discussed organisms. The new book follows the principal lines of the first edition, but has been improved and enlarged throughout. Six genera and 70 species have been added, so that the group now contains 49 genera with 246 species. The plates in the first edition were splendid, but those of the present volume are even better, and rank with the best illustrations which have ever been published of any plant structures.

Miss LISTER was constantly associated with her father in the preparation of the first volume, and the present work, published four years after his death, shows that she is able not only to make excellent illustrations, but also to organize and add to the text. It is distinctly a joint publication.

The "passing" of the slime molds is not referred to, the designation "organisms" being used in all cases, so that the title *Mycetozoa* is the only indication that the authors might be inclined to regard the organisms as animals rather than as plants. Until some decisive evidence appears, there is no reason for removing the specimens from the herbarium or for changing the library catalogues.—CHARLES J. CHAMBERLAIN.

**Handbook of deciduous trees.**—In 1904 SCHNEIDER's *Handbuch* began to appear, and at the completion of the first volume (1906) it was reviewed in this journal.<sup>3</sup> Since that time the six parts constituting the second volume have appeared at intervals, and have been noted. Now the work has been completed with the appearance of the twelfth part and the general index.<sup>4</sup> As stated in preceding notices, it contains descriptions, with illustrations, of the angiospermous trees of central Europe, both native and under cultivation. The final part completes the dicotyledons (*Fraxinus* to *Metaplexis*), contains

<sup>2</sup> LISTER, ARTHUR, and LISTER, GULIELMA, A monograph of the Mycetozoa, a descriptive catalogue of the species in the herbarium of the British Museum. 8vo. pp. 1-302. pls. 201. figs. 56. London: Printed by order of the Trustees of the British Museum. 1912.

<sup>3</sup> BOT. GAZ. 43:43:214. 1907.

<sup>4</sup> SCHNEIDER, C. K., Illustriertes Handbuch der Laubholzkunde. Zwölfte Lieferung. Imp. 8vo. pp. 817-1070. figs. 515-628. Jena: Gustav Fischer. 1911. M 5. Also Register. pp. vii+138. M 5.

the monocotyledons (*Yucca* to *Agave*), and also an extensive supplement (pp. 869-1065) to all the preceding parts.—J. M. C.

**North American flora.**<sup>5</sup>—Volume 17, part 2, contains the Poaceae (in part) from the genus *Arthraxon* to *Paspalum* by GEORGE VALENTINE NASH. One new genus is proposed, namely *Schaffnerella*, based on *Schaffnera gracilis* Benth. from Mexico. Several transfers are made, and new species are described in the following genera: *Schizachyrium* (4), *Andropogon* (1), *Amphilophis* (1), *Sorghastrum* (1), *Aegopogon* (2), and *Paspalum* (6).—J. M. GREENMAN.

## NOTES FOR STUDENTS

**Cytology of *Polytrichum*.**—What is to be regarded as the first critical work on the cytology of mosses appears in a recent number of *Archiv für Zellforschung*. ALLEN<sup>6</sup> has studied and described with great care the structure and division of the antheridial cells of *Polytrichum*. For the sake of accuracy he finds it advisable to introduce several new terms: the cells which are to be metamorphosed into spermatozoids are referred to as *androcytes*, those of the penultimate generation as *androcyte mother cells*, and those of all the earlier generations as *androgonies*.

In all androgonies a deeply staining kinoplasmic mass is present in the cytoplasm; in the earlier generations it has the form of a large plate, while in the later generations it usually exists as a group of smaller bodies or "kinetosomes." All transitions between the two conditions are found. Previous to mitosis, the plate divides to two daughter plates, or in the case of the kinetosomes into two daughter groups, which move apart and occupy positions at opposite sides of the nucleus. Before the division of the plate a few achromatic fibers connect it with the nuclear membrane, and when the divergence of the daughter plates is complete these have increased greatly in number, determining the position and extent of the future broad-poled spindle. In the cells with kinetosomes there are no fibers discernible until the migrating groups reach their final positions. The spindle at length includes connecting fibers, mantle fibers, and usually a few short, freely ending ones.

The resting nucleus contains a single deeply staining mass made up of both nucleolar material and chromatin, and a sparse reticulum composed of chromatin and linin. As mitosis approaches, the nucleus enlarges until its membrane touches the polar plates or kinetosomes, while the material of the reticulum forms a spirem which segments into chromosomes. The presence of nucleoli at this stage offers additional evidence that the chromatin and nucleolar substance are distinct. The nucleus now collapses and the chromatin

<sup>5</sup> North American flora, vol. 17, part 2, pp. 99-196. New York Botanical Garden. September 18, 1912.

<sup>6</sup> ALLEN, C. E., Cell structure, growth, and division in the antheridium of *Polytrichum juniperinum* Willd. *Archiv für Zellforschung* 8: 121-188. pls. 6-9. 1912.